Kim discloses in column 1 lines 61-67 a crystallizable thermoplastic comprised of a polyester/polyolefin blend. On page 4 lines 1-4 of the application as filed, Applicant states examples of crystallizable thermoplastics suitable for use in the claimed film. None of examples discloses polyolefins. Applicant has amended claim 1, so as to limit the claimed group of crystallizable thermoplastics to those films consisting essentially of only polyesters.

In column 1 lines 61 through 67, Kim discloses a biaxially oriented polymeric film prepared from a mixture of a polyester resin and a polyolefin resin. Kim is motivated to make this combination of polyolefin and polyester based upon the cited reference to Japanese Patent Laid-open publication Nos. 82-49648 and 88-168441 in column 1, lines 35 through 40. This combination creates microvoids on the surface and on the inside of the film obtained therefrom. This microvoid formation results in a film with increased opaqueness as compared to a film where the microvoids are not present.

One side effect of the polyester/polyolefin blend is a significant yellowing effect when regrind is used in the production of the film. As such, Kim's film would be unable to achieve one of the key aspects of Applicant's film: the use of regrind material without adverse effects to optical or mechanical properties.

Applicant desires to make a film that is recyclable, as disclosed on page 3 lines 16-19. Any film cut during the continuous production process, for example can be reground and fed back into the production operation without experiencing any loss of optical or mechanical properties. The yellowing properties inherent in any polyester/polyolefin regrind would have a deleterious effect on both the optical and mechanical properties of a resulting film made from such regrind. As such, the film disclosed by Kim could not be used with regrind while still maintaining good optical and mechanical properties.

Applicant's film is comprised of polyester resin without the inclusion of any polyolefin. As such, Applicant's film does not experience the deterioration of

mechanical properties that Kim discloses in column 1, lines 47 through 49, resulting from the combination of polyester and polyolefin into a polymeric film.

Kim goes on to disclose in column 6 lines 29 through 38, the use of a thermal stabilizer to prevent the decomposition of the polyester, and increase the heat-resistance of the polyolefin. Without this heat stabilizer included in the polymer matrix, heat resistance of Kim's film is poor, and oligomer production increases during extrusion molding and heat-aging processes. This in turn may degrade the mechanical properties of the resulting film and turn the color of the film yellow as stated in column 6, lines 36-38.

It is both surprising and unexpected that Applicant's film achieves such good mechanical and optical properties without the use of heat stabilizers such as those found in the Kim patent. Any yellowing or oligomer formation during extrusion molding would significantly compromise both the optical and mechanical properties that are desirable in Applicant's film. Either of these results would be entirely against the objects of Applicant's invention. The film disclosed by applicant does not yellow or form oligomers during extrusion molding. This is done without the addition of heat stabilizers as required by the film of Kim.

Kim discloses in column 3, lines 27-38 the use of an inorganic compound in the film. This inorganic compound is selected from a group that includes barium sulfate. However, as disclosed in column 2, lines 3-9, titanium dioxide is the preferred inorganic particle from this group. The titanium dioxide particles or other inorganic particles, including barium sulfate, are then preferably coated with a metal such as silver, copper, zinc or the like. See column 2 lines 6-9, and column 4 lines 52-55. This metal coating of the inorganic particles, including barium sulfate, is used to improve the light resistance of the film, see column 4 lines 52-55, and for its decomposition capabilities when used in freshness conserving packaging applications. See column 4 lines 60-64. As the preferred embodiment, Kim has several examples employing the titanium dioxide. However, none of the examples uses barium sulfate as the inorganic particle.

As used in the '931 film, these coated inorganic particles have the effect of augmenting the film's surface such that each particle protrudes slightly therefrom. By doing such, the amount of surface-to-surface contact in adjacent film layers is decreased. By lowering the surface-to-surface contact, there is less contact area between adjacent layers, and therefore less static charge that is built up when adjacent layers are rubbed or placed together. This is one object that Kim was trying to achieve with his film, as stated in column 1 lines 7-8.

In contrast, Applicant does not desire to decrease friction, but rather to create an improved white opaque film. While both Kim and applicant use barium sulfate in their respective films, the purpose for which the barium sulfate is employed is different. Kim uses barium sulfate for antistatic purposes. When used in this fashion, the normally white colored barium sulfate can be coated with other metals, such as silver, copper or zinc, enhancing the antistatic properties of the resulting film. In the current application, barium sulfate is used as a whitening agent. Kim's coated particles that are preferably used for antistatic purposes would impart undesirable gray, silver or copper colors to the film if they were to be employed as a whitening agent. Because of their differing use of barium sulfate, the Kim reference should not be applicable to the present film for the purpose of disclosing $BaSO_4$ in polyesters.

Consistent with this differing use of inorganic particles are the respective methods used by Kim and by applicant to determine surface gloss. Kim measured the gloss of the '931 film in accordance with ASTM D523 at an angle of 60° using a black mirror as a standard mirror. This is the appropriate test for films such as the one disclosed by Kim, where the film has a matte surface consistent with its use as a paper substitute. The matte gloss exhibited by Kim's film is largely due to the protruding inorganic particles have on the surface of the film. The non-uniform surface created by these protruding inorganic particles cause a scattering of reflected light that reduces the level of gloss in the film. In order to measure these lower gloss levels, the ASTM D523 method is used at an angle of 60° so that more light is reflected to the photoreceptor.

The gloss of Applicant's film was measured in accordance with DIN 67570 at an angle of 20°. This test is appropriate for films with a high gloss finish, not a matte finish as disclosed by Kim in the paper substitute application. By measuring the gloss at a lesser angle, less light is captured by the photocell. This is required for films with a high gloss finish when measurements taken at greater angles would be likely to overwhelm the detector and result in inaccurate measurements.

The DIN 67570 test would be inappropriate for the film disclosed by Kim. Likewise, the ASTM D523 test would be inappropriate for the applicant's film. The gloss exhibited by Kim's film would not be sufficient to give accurate results using DIN 67570. Similarly, gloss values of Applicant's invention would have a magnitude too high for accurate measurement using the ASTM D523 test. Gloss achieved in the present invention, as measured by DIN 67570, would therefore be much higher than the values as disclosed in the Kim patent.

This is best illustrated in the Gardner paper submitted with this amendment. As best understood by the applicant, the graph on page 3 of the submitted paper shows that for any gloss measurement angle, once a critical gloss value is achieved, the slope of the surface gloss v. reflected light intensity graph asymptotically decreases. Each measurement angle experiences this phenomenon, however each angle experiences this decrease at different gloss values. To achieve the most accurate gloss measurements, it would be necessary to choose a measurement angle where the gloss value measured would fall into the linear range of the gloss v. reflected light intensity graph. Where a high gloss is expected, a measurement angle of 20° is used. This 20° angle would give the most accurate measurement of gloss values in excess of 70 based upon the linear range of the gloss v. reflected light intensity graphs as shown. Note that measurement angles of 60° and 85° have already begun to show a decrease in the response signal given for this high gloss measurement. Therefore, as is the case of Applicant's high-gloss film, a measurement angle of 20° should be chosen.

In contrast, Kim's film uses a measurement angle of 60°. This higher angle is appropriate when measuring gloss of a surface that has a matte-like, less glossy finish. In the examples disclosed by Kim, gloss values are typically in the range of 40-60. As seen in the graph on page 3 of the Gardner paper submitted, Kim's gloss values are best measured with an angle of 60° where the response slope is greatest. Measuring gloss values such as Kim's with an angle of 20° would result in a less accurate result due to the nonlinearity and decreased response signal exhibited at that angle for the measured level of surface gloss.

Claim 6 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al., U.S. Pat No. 5,660,931 in view of von Meer, U.S. Pat. No. 4,384,040. In light of the current amendments to claim 1, and the comments thereto, claim 6 should be held in a condition for allowance as a properly dependent claim from an allowable independent claim 1.

Claim 7 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al., U.S. Pat No. 5,660,931 in view of Yamazaki, U.S. Pat. No. 6,106,924. In light of the current amendments to claim 1, and the comments thereto, claim 7 should be held in a condition for allowance as a properly dependent claim from an allowable independent claim 1.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is entitled **Version With Markings To Show Changes Made.**

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As amended, claim 1 is narrower in scope than in the previous application. In view of the Amendments to the claims, and in light of these remarks, it is submitted that the present application is now in condition for examination and such is earnestly solicited.

Respectfully submitted,

Klaus Schweitzer
(See attached Recognition Form)
ProPat L.L.C.
2912 Crosby Road
Charlotte, North Carolina 28211-2815
Telephone: (704) 365-4881
Fax: (704) 365-4851

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Art Unit 1774

Version with Markings To Sh w Changes Made

Please amend claim 1 as follows:

1. (Twice Amended) A opaque, white film with a thickness of from 10 to 500 μm, wherein the film comprises a crystallizable thermoplastic, barium sulfate, and at least one optical brightener, wherein said crystallizable thermoplastic consists essentially of polyester, wherein the barium sulfate or the optical brightener, or the barium sulfate and the optical brightener have been incorporated directly into the crystallizable thermoplastic or are fed as a masterbatch during film production, and wherein at least one surface of the film bears a functional coating with a thickness of from 5 to 10 nm, wherein the luminous transmittance of the film is reduced when the longitudinal stretch ratio is increased for a film of the same thickness.

Please add new claim 16 as follows:

16. The opaque white film as claimed in claim 1, wherein said opaque white film further comprises regrind.

Pg 6 Spec
(New matter
does not comprise regrind
regrind is by-product of invention